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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/551,867	04/18/2000	Shizuo Sumida	3411-4	2424
22204	7590	12/23/2004	EXAMINER	
NIXON PEABODY, LLP 401 9TH STREET, NW SUITE 900 WASHINGTON, DC 20004-2128			PHAN, THAI Q	
			ART UNIT	PAPER NUMBER
			2128	

DATE MAILED: 12/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Applicati n N .	Applicant(s)	
	09/551,867	SUMIDA ET AL.	
	Examiner	Art Unit	
	Thai Q. Phan	2128	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04/18/2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 4/18/00 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>07/25/2000 and 8/23/2000</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office Action is in response to patent application S/N: 09/551,867. Claims 1-37 are pending in the Action.

Drawings

The drawings filed on 04/18/2000 are acceptable for examination.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As cited "estimated observation quantity" in the non-linear characteristic reproducing unit is unclear for what the non-linear characteristic reproducing unit performs. Applicant is required to specify a specific function for the reproducing unit in the claim to make it clear and readable.

Claim 4 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The cited features of "the non-linear characteristic reproducing unit the estimation value" and "divided or differentiated with an absolute value" in the claim are unclear for what it claims for.

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Claim 19 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As cited "a logical value", "sampling time" and "discrete values" in the logical decision unit are unclear for what they relate to. What is the relationship or control function between the logical unit and the state quantity selecting unit so that a logic relation changed over other relation according to the logical value at subsequent sampling time as claimed?

As cited "a relation between the input state quantity and the output state quantity is changed over to a relation according to the logical value at the subsequent sampling time" in the state quantity selecting unit is unclear for how a relation changed over to a relation according to the logical value.

Claim 21 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. As cited "selecting unit integrates the input state quantity" is unclear for it represent for.

Claim 23 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As cited "estimated observation quantity" in the logical decision unit is unclear for what the logical decision function does. Applicant is also required to specify a specific function for the logical decision unit in the claim to make it clear and readable.

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Claim 23 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The cited feature "impossible state" in the claim made the claim unclear for what it claims for. What is the impossible state? Does it relate to uncontrollable state? Why impossible state need for control.

Claim 29 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As cited "a predetermined first quantity" is unclear for what it stands for.

As cited "the received estimated observation quantity" in the nonlinear model is unclear for what the quantity here represent for.

The cited "a slow change state quantity" and "behavior change" in the claim are unclear for what they represent for the system characteristics or state quantity under control. Clarification is required.

Similarly, claim 30 is rejected under 35 USC 112 for the cited "the estimated observation value" making the functional unit in the claim unclear.

Claim 37 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As cited “an estimated observation quantity” and “a predetermined first observation state quantity” and “the received estimated observation quantity” in the non-linear model make the claim unclear.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-28, and 33-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Samad (US Patent no. 5,847,952).

As per claim 1, Samad discloses a method and system for characterizing and characteristic reproducing apparatus using a non-linear transformation processing with feature limitations very similar to the claimed invention (Abstract and Summary of the Invention). According to Samad, the non-linear characteristic producing method includes means and steps:

A state transformation unit for linear transforming the first state quantity to the second state quantity every sample time for processing (Fig. 3, col. 3, lines 7-44, for example), and

Means for reproducing non-linear characteristic model and parameter transformation for the transformation unit (Figs. 7, 10, 12) at a subsequent sampling time in accordance with an estimated observation quantity at the subsequent sampling

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time of at least one state quantity of the first state quantity and the second state quantity or a state quantity derived from the one state quantity to set the determined transformation parameter to the state quantity (col. 4, line 9 to col. 9, line 49, for example). Samad does not expressly disclose state quantity associated with mechanical components in the present context.

It would have been obvious for those skilled in the art at the time of the invention was made to modify the teaching in Samad to non-linear model and control other claimed mechanical system such as a non-linear spring system, air spring, etc. which would require state space control and parameterized system control to optimally control the system and fine tune the system performance.

As per claim 2, Samad discloses the system including means to receive the estimated observation quantity and one or more variables as well. Samad also discloses determining the transformation parameter in accordance with the estimated observation quantity and state variables (col. 12, line 45 to col. 13, line 58).

As per claim 3, Samad discloses step of normalizing state estimate value with observed quantity.

As per claim 4, Samad discloses state space estimation with claimed feature for parameter estimate.

As per claims 5-14, Samad discloses the system control for controlling dynamical processes. These dynamical processes would include the claimed system such as non-linear spring system, air spring system, link mechanism, etc.

As per claim 15, Samad discloses a method and system for characterizing and characteristic reproducing apparatus using a non-linear transformation processing with feature limitations very similar to the claimed invention (Abstract and Summary of the Invention). According to Samad, the non-linear characteristic producing method includes means and steps:

A state transformation unit for linear transforming the first state quantity to the second state quantity every sample time for processing (Fig. 3, col. 3, lines 7-44, for example), and

Means for reproducing non-linear characteristic model and parameter transformation for the transformation unit (Figs. 7, 10, 12) at a subsequent sampling time in accordance with an estimated observation quantity at the subsequent sampling time of at least one state quantity of the first state quantity and the second state quantity or a state quantity derived from the one state quantity to set the determined transformation parameter to the state quantity (col. 4, line 9 to col. 9, line 49, for example). Samad does not expressly disclose state quantity associated with mechanical components in the present context.

It would have been obvious for those skilled in the art at the time of the invention was made to modify the teaching in Samad to non-linear model and control other claimed mechanical system such as a non-linear spring system, air spring, etc. which would require state space control and parameterized system control to optimally control the system and fine tune the system performance.

As per claim 16, Samad discloses the system including means to receive the estimated observation quantity and one or more variables as well. Samad also discloses determining the transformation parameter in accordance with the estimated observation quantity and state variables as claimed (col. 12, line 45 to col. 13, line 58).

As per claims 17 and 18, Samad discloses the system control for controlling dynamical processes. These dynamical processes would include the claimed system such as non-linear spring system, air spring system, link mechanism, Geneva control system, etc.

As per claim 19, Samad discloses a method and system (apparatus) for characterizing and characteristic reproducing apparatus using a non-linear transformation processing with feature limitations very similar to the claimed invention (Abstract and Summary of the Invention). According to Samad, the non-linear characteristic producing method includes logic means and steps:

A state transformation unit including logic relationship and decision for linear transforming the first state quantity to the second state quantity every sample time for processing (Fig. 3, col. 3, lines 7-44, for example), and

Means with selection quantity for reproducing non-linear characteristic model and parameter transformation for the transformation unit (Figs. 7, 10, 12) at a subsequent sampling time in accordance with an estimated observation quantity at the subsequent sampling time of at least one state quantity of the first state quantity and the second state quantity or a state quantity derived from the one state quantity to set the determined transformation parameter to the state quantity (col. 4, line 9 to col. 9, line

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49, for example). Samad does not expressly disclose state quantity associated with mechanical components in the present context.

It would have been obvious for those skilled in the art at the time of the invention was made to modify the teaching in Samad to non-linear model and control other claimed mechanical system such as a non-linear spring system, air spring, etc. which would require state space control and parameterized system control to optimally control the system and fine tune the system performance.

As per claim 20, Samad discloses a control system with non-linear behavior model to perform functions as claimed.

As per claims 21-26, Samad discloses the system controller for controlling dynamical processes. These dynamical processes would include the claimed system such as non-linear spring system, air spring system, link mechanism, reset mechanism, braking system, etc.

As per claim 27, Samad discloses a method and system for characterizing and characteristic reproducing apparatus using a non-linear transformation processing with feature limitations very similar to the claimed invention (Abstract and Summary of the Invention). According to Samad, the non-linear characteristic producing method includes means and steps:

A state transformation unit for linear transforming the first state quantity to the second state quantity every sample time for processing (Fig. 3, col. 3, lines 7-44, for example), and

Means for reproducing non-linear characteristic model and parameter transformation for the transformation unit (Figs. 7, 10, 12) at a subsequent sampling time in accordance with an estimated observation quantity at the subsequent sampling time of at least one state quantity of the first state quantity and the second state quantity or a state quantity derived from the one state quantity to set the determined transformation parameter to the state quantity (col. 4, line 9 to col. 9, line 49, for example). Samad does not expressly disclose state quantity associated with mechanical components in the present context.

It would have been obvious for those skilled in the art at the time of the invention was made to modify the teaching in Samad to non-linear model and control other claimed mechanical system such as a non-linear spring system, air spring, etc. which would require state space control and parameterized system control to optimally control the system and fine tune the system performance.

As per claim 28, Samad discloses state variation, determining state value, state estimation for optimization (cols. 7-13).

As per claims 33-36, Samad discloses a method and system for characterizing and characteristic reproducing apparatus using a non-linear transformation processing with feature limitations very similar to the claimed invention (Abstract and Summary of the Invention). According to Samad, the non-linear characteristic producing method includes means and steps:

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A state transformation unit for linear transforming the first state quantity to the second state quantity every sample time for processing (Fig. 3, col. 3, lines 7-44, for example), and

Means for reproducing non-linear characteristic model and parameter transformation for the transformation unit (Figs. 7, 10, 12) at a subsequent sampling time in accordance with an estimated observation quantity at the subsequent sampling time of at least one state quantity of the first state quantity and the second state quantity or a state quantity derived from the one state quantity to set the determined transformation parameter to the state quantity (col. 4, line 9 to col. 9, line 49, for example). Samad does not expressly disclose state quantity associated with mechanical components in the present context.

It would have been obvious for those skilled in the art at the time of the invention was made to modify the teaching in Samad to non-linear model and control other claimed mechanical system such as a non-linear spring system, air spring, etc. which would require state space control and parameterized system control to optimally control the system and fine tune the system performance.

Conclusion

1. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

1. US patent no. 5,627,768, issued to Uhlmann et al, on May 1997
2. US patent no. 5,835,682, issued to Broomhead et al, on Nov. 1998
3. US patent no. 5,963,888, issued to Uhlmann et al, on Oct. 1999

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4. US patent no. 6,199,019 B1, issued to lino et al, on Mar. 2001
2. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thai Q. Phan whose telephone number is 571-272-3783.
3. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jean Homere can be reached on 571-272-3780. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Dec. 07, 2004



Thai Phan
Patent Examiner
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